

CLAIMS

1. Cyclonic separating apparatus for separating solid material from a fluid, the apparatus having a separating chamber, an inlet communicating with the separating chamber for carrying the fluid with the solid matter entrained therein to the separating chamber, and an outlet for carrying the fluid away from the separating chamber after the solid material has been separated therefrom, the outlet being formed by a conduit communicating with the interior of the separating chamber and having a longitudinal axis, wherein a plurality of grooves are formed in an interior surface of the conduit, the grooves extending in the same direction as the longitudinal axis.
2. Cyclonic separating apparatus as claimed in claim 1, wherein the grooves extend substantially parallel to the longitudinal axis.
3. Cyclonic separating apparatus as claimed in claim 1 or 2, wherein the grooves extend along the conduit for at least one quarter of the length thereof.
4. Cyclonic separating apparatus as claimed in claim 3, wherein the grooves extend along the conduit for at least half of the length thereof.
5. Cyclonic separating apparatus as claimed in claim 4, wherein the grooves extend along substantially the entire length of the conduit.
6. Cyclonic separating apparatus as claimed in any one of the preceding claims, wherein each groove is identical to the other grooves.
7. Cyclonic separating apparatus as claimed in any one of the preceding claims, wherein each groove is triangular in shape.
8. Cyclonic separating apparatus as claimed in any one of claims 1 to 6, wherein each groove is rectangular in shape.

9. Cyclonic separating apparatus as claimed in claim 7 or 8, wherein the depth of each groove is less than the breadth of each groove.

5 10. Cyclonic separating apparatus as claimed in any one of the preceding claims, wherein adjacent grooves are spaced apart from one another by portions of the interior surface of the conduit.

10 11. Cyclonic separating apparatus as claimed in claim 10, wherein the breadth of each groove is greater than the breadth of either of the portions of the interior surface adjacent the said groove.

15 12. Cyclonic separating apparatus as claimed in claim 10; wherein the breadth of each groove is substantially the same as the breadth of each portion of the interior surface adjacent the said groove.

13. Cyclonic separating apparatus as claimed in any one of claims 10 to 12, wherein the portions of the interior surface of the conduit lie on a cylindrical surface.

20 14. Cyclonic separating apparatus as claimed in any one of the preceding claims, wherein the grooves are equiangularly spaced about the longitudinal axis.

15. Cyclonic separating apparatus as claimed in any one of the preceding claims, wherein at least four grooves are provided.

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16. Cyclonic separating apparatus as claimed in claim 15, wherein at least eight grooves are provided.

30 17. Cyclonic separating apparatus as claimed in claim 16, wherein at least twelve grooves are provided.

18. Cyclonic separating apparatus as claimed in any one of the preceding claims, wherein the upstream end of the conduit is radiused on the outer surface thereof.

19. Cyclonic separating apparatus as claimed in any one of the preceding claims,
5 wherein at least one inwardly projecting protrusion is provided adjacent at least one of the grooves.

20. Cyclonic separating apparatus as claimed in claim 19, wherein inwardly projecting protrusions are provided on both sides of the respective groove or grooves.
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21. Cyclonic separating apparatus as claimed in claim 19 or 20, wherein the inwardly projecting protrusions extend along the whole of the length of the respective groove or grooves.

22. Cyclonic separating apparatus as claimed in any one of claims 19 to 21, wherein each groove has projections provided on both sides thereof.
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23. Cyclonic separating apparatus substantially as hereinbefore described with reference to any one of the embodiments shown in Figures 1 and 3 to 6 of the accompanying drawings.
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24. A vacuum cleaner incorporating cyclonic separating apparatus as claimed in any one of the preceding claims.